Original Research Article

Correlation Between KL Gradings of OA Knee, Kinesiophobia and Pain Among School Teachers: A Cross-Sectional Study

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ABSTRACT

Background: Osteoarthritis also known as degenerative arthritis or degenerative joint disease, is a group of mechanical abnormalities involving degradation of joints, including articular cartilage and subchondral bone. OA is the most common form of arthritis. There are two form of OA, Primary and Secondary OA. Kinesiophobia is a condition in which a patient has an excessive, irritational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or re injury. The influence of biological (exa-gray changes) as well as severity of pain, Kinesiophobia in individual physical functioning. There are less evidences showing the association of kinesiophobia and pain among school teachers with OA knee. So, this study was designed to find out the association of kinesiophobia and pain among school teachers with OA knee.

Methodology: A cross-sectional observational study was conducted. 100 school teachers with unilateral or bilateral OA knee were selected who matched the selection criteria. Both male and female were included. For gradings of OA knee KL grade was taken, for kinesiophobia TAMPA scale was taken, for pain NPRS was taken as an outcome measures.

Result: Spearman co-efficient between KL grade and TAMPA scale is 0.835, which indicates there is moderate to high positive correlation between KL grade and TAMPA scale. Spearman co-efficient between NPRS and TAMPA scale is 0.923, which indicates there is high positive (strong positive) correlation between NPRS and TAMPA scale. Spearman co-efficient between NPRS and KL grade is 0.784 which indicates there is moderate positive correlation between NPRS and KL grade.

Conclusion: This study concludes that there is positive correlation between gradings of OA knee and kinesiophobia among teachers with OA knee. There is moderate positive correlation between gradings of OA and pain among teachers with OA knee. There is very high positive (Strong positive) correlation between kinesiophobia and pain among teachers with OA knee.

Keywords: KL Gradings of OA Knee, OA knee, kinesiophobia, osteoarthritis

INTRODUCTION

Osteoarthritis also known as degenerative arthritis or degenerative joint disease, is a group of mechanical abnormalities involving degradation of joints, including

articular cartilage and subchondral bone. OA is the most common form of arthritis. There are two form of OA, Primary and Secondary OA [1]. The knee joint is commonly affected by OA. The prevalence of knee OA is rising and this may be, at least in part, due to the rising prevalence of obesity and an ageing population [2]. About 13% of women and 10% of men aged 60 years and older have symptomatic knee Osteoarthritis. The proportions of people affected with symptomatic knee OA is likely to increase due to the aging of the population and the rate of obesity or overweight in the general population [3]. During a one-year period, 25% of people over 55 years may demonstrate persistent episode of knee pain, in whom about one in six have to consult their general practitioner about it in the same time period. About 10% of people aged over 55 years have painful disabling knee OA of whom one quarter are severely disabled [3]. Osteoarthritis has a multifactorial aetiology, which occurs due to interplay between systemic and local factors. The aetiology of this debilitating disease in which several responsible genes are linked for its occurrence. Sports participation, injury to the joint, obesity, and genetic susceptibility predispose adolescent athletes to the development of premature osteoarthritis. Previous knee trauma increases the risk of knee OA 3.86 times [3]. OA is a condition with a multifaceted aetiology that afflicts both load-bearing and non– weight-bearing joints. The risk of developing OA substantially increases with each decade after the age of 45 years [4]. Exact cause of OA is unknown, but its strongly believed that it occurs due to aging or wear and tear or degenerative changes in joints. Risk factor for OA knee include sage, gender, obesity, occupation, sports, osteoporosis, previous trauma, irregularity in joint surfaces, internal derangement, heredity, leisure, and diseases leaving articular cartilage damage [5]. Kinesiophobia is a condition in which a patient has an excessive, irritational, and debilitating fear of physical movement and activity resulting from a feeling of vulnerability to painful injury or re injury. The influence of biological (exa-gray changes) as well as severity of pain, Kinesiophobia in individual physical functioning. As there is progression in level or stage of OA there is increase in severity of pain which leads to further increase in level of Kinesiophobia in individuals with OA of knee [6]. In knee OA, medial compartment is more frequently affected than lateral because higher transfer of loads through the medial compartment than lateral, which result in higher knee adduction moment [7].

There are less evidences showing the association of kinesiophobia and pain among school teachers with OA knee. So, this study was designed to find out the association of kinesiophobia and pain among school teachers with OA knee.

METHODOLOGY

Study Design: Cross sectional observational study.
Study Population: Teachers with OA Knee.
Samling Technique: Convenient sampling.
Study Duration: 6-month
Sample Size: 100
Study Setting: Various schools from Surat city.

Inclusion Criteria
1. School teachers who were willing to participate and was ready to give consent.
2. School teachers with osteoarthritis, having standing job of 6 hours (despite of home routine) since last 10 years or more than that.
3. Both male and female aging between 40-55 years were included.
4. Patients with unilateral and bilateral knee involvement.
5. 4.Patients with NPRS between 5-8, KL grade 2-3 were included.

Exclusion Criteria
1. Patient with history of previous knee injury or inflammatory joint disease.
2. Patient with, rheumatoid arthritis or other systemic conditions.

3. Patients who have taken intra-articular steroidal injections during last 6 months in the same sided knee joint.
4. Patients who have undergone through surgery of same sided knee joint.

Outcome Measures
Pain – NPRS. (Reliability= 0.96-0.95 and Validity=0.86-0.95[8])
Kinesiophobia- TAMPA Scale. (Reliability = 0.887 and validity=0.33-0.59[9])

STASTICAL ANALYSIS
It was done by using JAMOVI 2.3.28. Normality of the data was tested by SHAPIRO-WILKTEST.As the data of gradings of OA (KL GRADE) and pain (NPRS) was showing not normal distribution, so further data analysis was done by using NON-PARAMETRIC TEST. Correlation of TAMPA SCALE, KL-GRADE, NPRS was done by using spearman's correlation test.

RESULT

Table-1(Descriptive statistics)

DESCRIPTIVE	TAMPA	KLGRADE	NPRS
N	100	100	100
Mean	43.9	1.89	5.04
Standard deviation	5.74	0.665	1.9
Shapiro-wilk p	0.264	<0.001	0.001
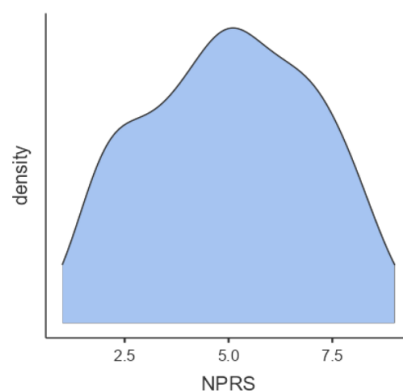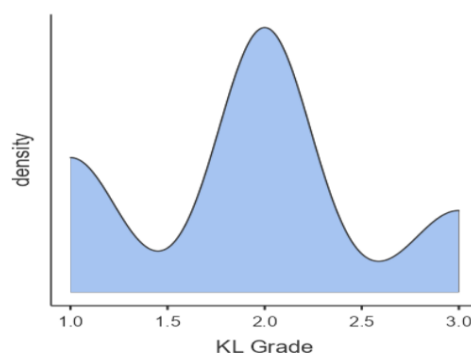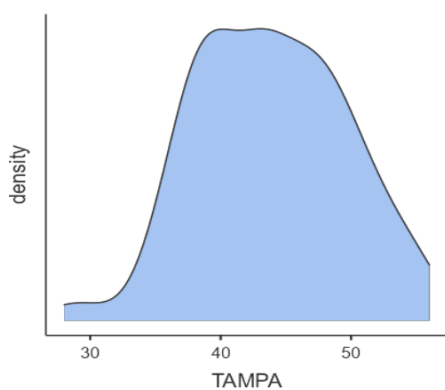
Table -2 (Table of Correlation)

		TAMPA	KLGRADE
TAMPA	Spearman's rho p-value		
KL GRADE	Spearman's rho	0.835	
	p-value	<.001	
NPRS	Spearman's rho	0.923	0.784
	p-value	<.001	<.001

As the table 1 shows mean of TAMPA SCALE is 43.9, KL grade is1.89 and NPRS is 5.04. As the table 1 shows standard deviation of TAMPA scale is 5.74, KL grade is 0.665 and NPRS is 1.9. As the table 1 shows Shapiro-wilk p of TAMPA scale is 0.264, KL grade is 0.05, which indicates that the data is normally distribution. As the P value of KL grade is<0.001, which is <0.05. which indicates that data is not normally distributed. As the P value of NPRS is 0.001, which is <0.05, which indicates that the data is not normally distributed.

Table 2 shows the spearman co-efficient between KL grade and TAMPA scale is 0.835, which indicates there is high positive correlation between KL grade and TAMPA scale. Table-2 shows the spearman co-efficient between NPRS and TAMPA scale is 0.923, which indicates there is Very high positive (strong positive) correlation between NPRS and TAMPA scale. Table -2 shows the spearman co-efficient between NPRS and KL grade is 0.784 which indicates there is moderate positive correlation between NPRS and KL grade.

DISCUSSION

There are less evidence showing the association between kinesiophobia and pain in OA knee of the school teachers. As the table1 shows mean Of TAMPA SCALE is 43.9, KL grade is 1.89 and NPRS is 5.0. As the table 1 shows Shapiro-wilk p of TAMPA scale is 0.264, KL grade is <0.001 and NPRS is 0.001. Table 2 shows the spearman co-efficient between KL grade and TAMPA scale is 0.835, which indicates there is high positive correlation between KL grade and TAMPA scale. Table-2 shows the spearman co-efficient between NPRS and TAMPA scale is 0.923, which indicates there is Very high positive (strong positive) correlation between NPRS and TAMPA scale. Table -2 shows the spearman co-efficient between NPRS and KL grade is 0.784 which indicates there is moderate positive correlation between NPRS and KL grade.

According to pathophysiology grades of OA, pain and kinesiophobia are inter-related. As the disease progresses the joint space gets narrow, resulting in exposure of nociceptors which results in pain. Similarly, as the disease progresses, resulting in reduced proprioceptive sensation with time. So, it may result in kinesiophobia if the condition is long standing. [10] Prolong OA knee might result in central sensitization with time. [11,12] So, patient's pain pressure threshold might be reduced if the condition is centrally sensitized. But the proportion and correlation of progression of OA knee, pain and kinesiophobia among school teachers was not identified yet. This study reveals the correlation of progression of disease along with kinesiophobia, correlation of progression of disease along with pain and correlation of kinesiophobia along with pain among school teachers.

CONCLUSION

This study concludes that there is positive correlation between gradings of OA knee and kinesiophobia among teachers with OA knee. There is moderate positive correlation between gradings of OA and pain among teachers with OA knee. There is very high positive (Strong positive) correlation between kinesiophobia and pain among teachers with OA knee.

Limitations and further recommendations

- As this study was done on the school teachers, it can be conducted targeting other prolong standing occupation.
- As only 3 factors were considered for correlation, in future other factors can be taken into consideration for correlation.

Declaration by Authors
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